# Newsletter

**Spring 2026**

## Marine

## The marine environment

LIFE WADER's goal is to allow nature to thrive from source-to-sea – now and in the future. Understanding and alleviating issues in the marine environment, both intertidal and coastal, is pivotal to our work. Read on to find out how we are helping to protect the coast from water-borne invasives, mitigating the impact of freshwater pollution and exploring the economic potential of seaweed. In the short-term we hope these approaches will be used elsewhere in the project area (e.g. the Tweed Estuary) and in the long-term across the UK and even worldwide.

## Macroalgae

Excess levels of nitrates in the coastal waters around Lindisfarne National Nature Reserve have led to the formation of large green mats of 'macroalgae', which are causing huge problems for nature and wildlife. They smother underlying habitats, suffocate carbon-capturing seagrass and kill-off the fauna upon which up to 60,000 overwintering wetland wildfowl depend. WADER is conducting in-depth analysis to understand the sources of nutrients entering water courses, how the macroalgae functions, the impact it has on local ecology and effective mechanisms to manage growth. We are also pioneering ways to safely remove and recycle it.

## Analysis

In June 2023, WADER gathered the first macroalgae, sediment, epifaunal, and water samples from the Budle Bay mat. We set in motion a methodology to collect and process data monthly, enabling us to see changes over time. We are currently monitoring 35 quadrats across seven locations to assess the quantity of algae, alga types and invertebrate species present.

## Modelling

WADER is using Biological modelling to describe and understand the nutrient dynamics of the land to sea interface at Budle Bay. Modellers at Newcastle University developed a series

of bespoke inter-linked models to predict the spatial pattern of ulva growth and how this responds to temporal changes in nutrient levels, such as those that might occur during high rainfall events during different tidal states. The team are also using hydrological models of the River Tweed system to model the nutrients and sediments reaching the sea. The models will be used to assess the project interventions, such as wetland creation or woodland planting, on nutrient levels and distribution. In the future we plan to use the models to test other interventions and mitigations at different scales.

## Removal

In late summer 2025, a team of scientists from Natural England, Newcastle University and the Environment Agency piloted different methods of algae removal on different habitats. Watch our short video via the link below: Simultaneously, WADER is exploring various innovative ways to recycle the harvested waste commercially.

## Catchment interventions

Evidence suggests that excessive marine algal growth is caused by high levels of nutrients entering from the land via burns, streams and drains. WADER is working with landowners delivering interventions upstream to reduce nutrient in-flow. These include improved soil management, wetland creation, riparian planting, innovations in animal grazing, river restoration and public engagement.

## Tackling invasive species

Invasive species can impact the rich marine habitats and species of the North Sea. The WADER team are exploring the distribution of marine invasive species on the Northumberland Coast and developing best practice for early detection. Together, we are developing a 'rapid response toolkit', exploring vectors of transportation and engaging a network of stakeholders to deliver biosecurity protocols across the region.

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